
argschema Documentation

Release 1.1.1

Forrest Collman, David Feng

Sep 22, 2017

Contents

1	The User Guide	3
1.1	User Guide	3
1.2	Indices and tables	7
2	API	9
2.1	argschema package	9
3	TESTS	27
3.1	test	27
3.2	fields package	34
4	Indices and tables	39
4.1	Support/Contribute	39
4.2	License	39
	Python Module Index	41

This python module enables python programs to specify and validate their input parameters via a schema, while allowing those parameters to be passed into it in different ways in different contexts.

In particular it will allow you to

1. Specify an input_json file which contains the parameters via the command line
2. OR pass a dictionary directly into the module with the parameters defined
3. AND/OR pass individual parameters via the command line, in a way that will override the input_json or the dictionary given.

In all cases, it will merge these different parameters into a single dictionary and then validate the parameters against your schema.

This is where you should start to understand how to use argschema

User Guide

Your First Module

Listing 1.1: mymodule.py

```
import argschema

class MySchema(argschema.ArgSchema):
    a = argschema.fields.Int(default = 42, description= 'my first parameter')

if __name__ == '__main__':
    mod = argschema.ArgSchemaParser(schema_type=MySchema)
    print(mod.args)
```

running this code produces

```
$ python mymodule.py
{'a': 42, 'log_level': u'ERROR'}
$ python mymodule.py --a 2
{'a': 2, 'log_level': u'ERROR'}
$ python mymodule.py --a 2 --log_level WARNING
{'a': 2, 'log_level': u'WARNING'}
WARNING:argschema.argschema_parser:this program does nothing useful
$ python mymodule.py -h
usage: mymodule.py [-h] [--a A] [--output_json OUTPUT_JSON]
                  [--log_level LOG_LEVEL] [--input_json INPUT_JSON]

optional arguments:
```

```
-h, --help            show this help message and exit
--a A                my first parameter
--output_json OUTPUT_JSON
                    file path to output json file
--log_level LOG_LEVEL
                    set the logging level of the module
--input_json INPUT_JSON
                    file path of input json file
```

Great you are thinking, that is basically argparse, congratulations!

But there is more.. you can also give your module a dictionary in an interactive session

```
>>> from argschema import ArgSchemaParser
>>> from mymodule import MySchema
>>> d = {'a':5}
>>> mod = ArgSchemaParser(input_data=d, schema_type=MySchema)
>>> print(mod.args)
{'a': 5, 'log_level': u'ERROR'}
```

or you write out a json file and pass it the path on the command line

Listing 1.2: myinput.json

```
{
  "a":99
}
```

```
$ python mymodule.py --input_json myinput.json
{'a': 99, 'log_level': u'ERROR', 'input_json': u'myinput.json'}
```

or override a parameter if you want

```
$ python mymodule.py --input_json myinput.json --a 100
{'a': 100, 'log_level': u'ERROR', 'input_json': u'myinput.json'}
```

plus, no matter how you give it parameters, they will always be validated, before any of your code runs.

Whether from the command line

```
$ python mymodule.py --input_json myinput.json --a 5!
usage: mymodule.py [-h] [--a A] [--output_json OUTPUT_JSON]
                  [--log_level LOG_LEVEL] [--input_json INPUT_JSON]
mymodule.py: error: argument --a: invalid int value: '5!'
```

or from a dictionary

```
>>> from argschema import ArgSchemaParser
>>> from mymodule import MySchema
>>> d={'a':'hello'}
>>> mod = ArgSchemaParser(input_data=d, schema_type=MySchema)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
  File "/Users/forrestcollman/argschema/argschema/argschema_parser.py", line 159, in
->in __init__
    raise mm.ValidationError(json.dumps(result.errors, indent=2))
marshmallow.exceptions.ValidationError: {
  "a": [
```

```

    "Not a valid integer."
]
}

```

Fields

argschema uses `marshmallow` (<http://marshmallow.readthedocs.io/>) under the hood to define the parameters schemas. It comes with a basic set of fields that you can use to define your schemas. One powerful feature of Marshmallow is that you can define custom fields that do arbitrary validation. `fields` contains all the built-in marshmallow fields, but also some useful custom ones, such as `InputFile`, `OutputFile`, `InputDir` that validate that the paths exist and have the proper permissions to allow files to be read or written.

Other fields, such as `NumpyArray` will deserialize ordered lists of lists directly into a numpy array of your choosing.

Finally, an important Field to know is `Nested`, which allows you to define heirarchical nested structures. Note, that if you use Nested schemas, your Nested schemas should subclass `DefaultSchema` in order that they properly fill in default values, as `marshmallow.Schema` does not do that by itself.

The `template_module` example shows how you might combine these features to define a more complex parameter structure.

Listing 1.3: `template_module.py`

```

from argschema import ArgSchemaParser, ArgSchema
from argschema.fields import OutputFile, NumpyArray, Boolean, Int, Str, Nested
from argschema.schemas import DefaultSchema
import numpy as np
import json

# these are the core parameters for my module
class MyNestedParameters(DefaultSchema):
    name = Str(required=True, description='name of vector')
    increment = Int(required=True, description='value to increment')
    array = NumpyArray(dtype=np.float, required=True, description='array to increment
↪')
    write_output = Boolean(required=False, default=True)

# but i'm going to nest them inside a subsection called inc
class MyParameters(ArgSchema):
    inc = Nested(MyNestedParameters)

#this is another schema we will use to validate and deserialize our output
class MyOutputParams(DefaultSchema):
    name = Str(required=True, description='name of vector')
    inc_array = NumpyArray(dtype=np.float, required=True, description='incremented_
↪array')

if __name__ == '__main__':

    # this defines a default dictionary that will be used if input_json is not_
↪specified
    example_input = {
        "inc": {
            "name": "from_dictionary",
            "increment": 5,
            "array": [0, 2, 5],

```

```
        "write_output": True
    },
    "output_json": "output_dictionary.json"
}

# here is my ArgSchemaParser that processes my inputs
mod = ArgSchemaParser(input_data=example_input,
                      schema_type=MyParameters,
                      output_schema_type=MyOutputParams)

# pull out the inc section of the parameters
inc_params = mod.args['inc']

# do my simple addition of the parameters
inc_array = inc_params['array'] + inc_params['increment']

# define the output dictionary
output = {
    'name': inc_params['name'],
    'inc_array': inc_array
}

# if the parameters are set as such write the output
if inc_params['write_output']:
    mod.output(output)
```

so now if run the example commands found in `run_template.sh`

Listing 1.4: input.json

```
{
  "inc": {
    "name": "from_json",
    "increment": 1,
    "array": [3, 2, 1],
    "write_output": true
  }
}
```

```
$ python template_module.py \
  --output_json output_command.json \
  --inc.name from_command \
  --inc.increment 2
{'name': u'from_command', u'inc_array': [2.0, 4.0, 7.0]}
$ python template_module.py \
  --input_json input.json \
  --output_json output_fromjson.json
{'name': u'from_json', u'inc_array': [4.0, 3.0, 2.0]}
$ python template_module.py
{'name': u'from_dictionary', u'inc_array': [5.0, 7.0, 10.0]}
```

Sphinx Documentation

argschema comes with a autodocumentation feature for Sphinx which will help you automatically add documentation of your Schemas and ArgSchemaParser classes in your project. This is how the documentation of the `test` suite included here was generated.

To configure sphinx to use this function, you must be using the sphinx autodoc module and add the following to your conf.py file

```
from argschema.autodoc import process_schemas

def setup(app):
    app.connect('autodoc-process-docstring', process_schemas)
```

Installation

install via source code

```
$ python setup.py install
```

or pip

```
$ pip install argschema
```

Indices and tables

- [genindex](#)
- [modindex](#)
- [search](#)

This contains the complete documentation of the api

argschema package

Subpackages

argschema.fields package

Submodules

argschema.fields.files module

marshmallow fields related to validating input and output file paths

```
class argschema.fields.files.InputDir (default=<marshmallow.missing>,      attribute=None,
                                         load_from=None, dump_to=None, error=None, val-
                                         idate=None,   required=False, allow_none=None,
                                         load_only=False,      dump_only=False,      miss-
                                         ing=<marshmallow.missing>,  error_messages=None,
                                         **metadata)
```

Bases: `marshmallow.fields.String`

`InputDir` is `marshmallow.fields.Str` subclass which is a path to a directory that exists and that the user can access (presently checked with `os.access`)

```
class argschema.fields.files.InputFile (default=<marshmallow.missing>,      attribute=None,
                                         load_from=None, dump_to=None, error=None, val-
                                         idate=None,   required=False, allow_none=None,
                                         load_only=False,      dump_only=False,      miss-
                                         ing=<marshmallow.missing>,  error_messages=None,
                                         **metadata)
```

Bases: `marshmallow.fields.String`

`InputDile` is a `marshmallow.fields.Str` subclass which is a path to a file location which can be read by the user (presently passes `os.path.isfile` and `os.access = R_OK`)

class `argschema.fields.files.OutputDir` (*mode=None, *args, **kwargs*)

Bases: `marshmallow.fields.String`

`OutputDir` is a `marshmallow.fields.Str` subclass which is a path to a location where this module will write files. Validation will check that the directory exists and create the directory if it is not present, and will fail validation if the directory cannot be created or cannot be written to.

Parameters

- **mode** (*str*) – mode to create directory
- ***args** – same as passed to `marshmallow.fields.Str`
- ****kwargs** – same as passed to `marshmallow.fields.Str`

class `argschema.fields.files.OutputFile` (*default=<marshmallow.missing>, attribute=None, load_from=None, dump_to=None, error=None, validate=None, required=False, allow_none=None, load_only=False, dump_only=False, missing=<marshmallow.missing>, error_messages=None, **metadata*)

Bases: `marshmallow.fields.String`

`OutputFile` `marshmallow.fields.Str` subclass which is a path to a file location that can be written to by the current user (presently tested by opening a temporary file to that location)

`argschema.fields.files.validate_outpath` (*path*)

argschema.fields.loglevel module

marshmallow fields related to setting logging levels

class `argschema.fields.loglevel.LogLevel` (***kwargs*)

Bases: `marshmallow.fields.String`

`LogLevel` is a field type that provides a setting for the loglevel of `python.logging`. This class will both validate the input and also *set* the input globally. In simple scenarios, a module will not have to do any manipulation of loglevel.

options = ['FATAL', 'CRITICAL', 'ERROR', 'WARN', 'WARNING', 'INFO', 'DEBUG']

argschema.fields.numpyarrays module

marshmallow fields related to reading in numpy arrays

class `argschema.fields.numpyarrays.NumpyArray` (*dtype=None, *args, **kwargs*)

Bases: `marshmallow.fields.List`

`NumpyArray` is a `marshmallow.fields.List` subclass which will convert any numpy compatible set of lists into a numpy array after deserialization and convert it back to a list when serializing,

Parameters **dtype** (*numpy.Dtype*) – dtype specifying the desired data type. if dtype is given the array will be converted to the type, otherwise numpy will decide what type it should be. (Default=None)

argschema.fields.slice module

class argschema.fields.slice.**Slice** (**kwargs)

Bases: `marshmallow.fields.String`

Slice is a `:class:'marshmallow.fields.Str'` field that supports a range or slice argument for selecting some subset of a larger dataset. The syntax is identical to numpy slicing. Examples: "10:20", "40", ":30", "10:2:40"

Parameters **kwargs** – the same as any `Str` receive

Module contents

sub-module for custom marshmallow fields of general utility

class argschema.fields.**Field** (default=<marshmallow.missing>, attribute=None, load_from=None, dump_to=None, error=None, validate=None, required=False, allow_none=None, load_only=False, dump_only=False, missing=<marshmallow.missing>, error_messages=None, **metadata)

Bases: `marshmallow.base.FieldABC`

Basic field from which other fields should extend. It applies no formatting by default, and should only be used in cases where data does not need to be formatted before being serialized or deserialized. On error, the name of the field will be returned.

Parameters

- **default** – If set, this value will be used during serialization if the input value is missing. If not set, the field will be excluded from the serialized output if the input value is missing. May be a value or a callable.
- **attribute** (*str*) – The name of the attribute to get the value from. If *None*, assumes the attribute has the same name as the field.
- **load_from** (*str*) – Additional key to look for when deserializing. Will only be checked if the field's name is not found on the input dictionary. If checked, it will return this parameter on error.
- **dump_to** (*str*) – Field name to use as a key when serializing.
- **validate** (*callable*) – Validator or collection of validators that are called during deserialization. Validator takes a field's input value as its only parameter and returns a boolean. If it returns *False*, an `ValidationError` is raised.
- **required** – Raise a `ValidationError` if the field value is not supplied during deserialization.
- **allow_none** – Set this to *True* if *None* should be considered a valid value during validation/deserialization. If *missing=None* and *allow_none* is unset, will default to *True*. Otherwise, the default is *False*.
- **load_only** (*bool*) – If *True* skip this field during serialization, otherwise its value will be present in the serialized data.
- **dump_only** (*bool*) – If *True* skip this field during deserialization, otherwise its value will be present in the deserialized object. In the context of an HTTP API, this effectively marks the field as "read-only".
- **missing** – Default deserialization value for the field if the field is not found in the input data. May be a value or a callable.
- **error_messages** (*dict*) – Overrides for *Field.default_error_messages*.

- **metadata** – Extra arguments to be stored as metadata.

Changed in version 2.0.0: Removed *error* parameter. Use *error_messages* instead.

Changed in version 2.0.0: Added *allow_none* parameter, which makes validation/deserialization of *None* consistent across fields.

Changed in version 2.0.0: Added *load_only* and *dump_only* parameters, which allow field skipping during the (de)serialization process.

Changed in version 2.0.0: Added *missing* parameter, which indicates the value for a field if the field is not found during deserialization.

Changed in version 2.0.0: *default* value is only used if explicitly set. Otherwise, missing values inputs are excluded from serialized output.

context

The context dictionary for the parent *Schema*.

default_error_messages = {u'null': u'Field may not be null.', u'validator_failed': u'Invalid value.', u'required': u'

deserialize (*value*, *attr*=None, *data*=None)

Deserialize *value*.

Raises *ValidationError* – If an invalid value is passed or if a required value is missing.

fail (*key*, ***kwargs*)

A helper method that simply raises a *ValidationError*.

get_value (*attr*, *obj*, *accessor*=None, *default*=<marshmallow.missing>)

Return the value for a given key from an object.

root

Reference to the *Schema* that this field belongs to even if it is buried in a *List*. Return *None* for unbound fields.

serialize (*attr*, *obj*, *accessor*=None)

Pulls the value for the given key from the object, applies the field's formatting and returns the result.

Parameters

- **attr** (*str*) – The attribute or key to get from the object.
- **obj** (*str*) – The object to pull the key from.
- **accessor** (*callable*) – Function used to pull values from *obj*.

Raises *ValidationError* – In case of formatting problem

```
class argschema.fields.Raw (default=<marshmallow.missing>, attribute=None, load_from=None,
                           dump_to=None, error=None, validate=None, required=False,
                           allow_none=None, load_only=False, dump_only=False, miss-
                           ing=<marshmallow.missing>, error_messages=None, **metadata)
```

Bases: `marshmallow.fields.Field`

Field that applies no formatting or validation.

```
class argschema.fields.Nested (nested, default=<marshmallow.missing>, exclude=(), only=None,
                              **kwargs)
```

Bases: `marshmallow.fields.Field`

Allows you to nest a *Schema* inside a field.

Examples:

```

user = fields.Nested(UserSchema)
user2 = fields.Nested('UserSchema') # Equivalent to above
collaborators = fields.Nested(UserSchema, many=True, only='id')
parent = fields.Nested('self')

```

When passing a *Schema* <marshmallow.Schema> instance as the first argument, the instance's `exclude`, `only`, and `many` attributes will be respected.

Therefore, when passing the `exclude`, `only`, or `many` arguments to *fields.Nested*, you should pass a *Schema* <marshmallow.Schema> class (not an instance) as the first argument.

```

# Yes
author = fields.Nested(UserSchema, only=('id', 'name'))

# No
author = fields.Nested(UserSchema(), only=('id', 'name'))

```

Parameters

- **nested** (*Schema*) – The Schema class or class name (string) to nest, or "self" to nest the Schema within itself.
- **default** – Default value to if attribute is missing or None
- **exclude** (*tuple*) – A list or tuple of fields to exclude.
- **required** – Raise an `ValidationError` during deserialization if the field, and any required field values specified in the *nested* schema, are not found in the data. If not a *bool* (e.g. a *str*), the provided value will be used as the message of the `ValidationError` instead of the default message.
- **only** – A tuple or string of the field(s) to marshal. If *None*, all fields will be marshalled. If a field name (string) is given, only a single value will be returned as output instead of a dictionary. This parameter takes precedence over `exclude`.
- **many** (*bool*) – Whether the field is a collection of objects.
- **kwargs** – The same keyword arguments that *Field* receives.

default_error_messages = {u'type': u'Invalid type.'}

schema

The nested Schema object.

Changed in version 1.0.0: Renamed from *serializer* to *schema*

```

class argschema.fields.Dict (default=<marshmallow.missing>, attribute=None, load_from=None,
                             dump_to=None, error=None, validate=None, required=False,
                             allow_none=None, load_only=False, dump_only=False, missing=<marshmallow.missing>, error_messages=None, **metadata)

```

Bases: `marshmallow.fields.Field`

A dict field. Supports dicts and dict-like objects.

Note: This field is only appropriate when the structure of nested data is not known. For structured data, use *Nested*.

New in version 2.1.0.

```
default_error_messages = {u'invalid': u'Not a valid mapping type.'}
```

```
class argschema.fields.List(cls_or_instance, **kwargs)
    Bases: marshmallow.fields.Field
```

A list field, composed with another *Field* class or instance.

Example:

```
numbers = fields.List(fields.Float())
```

Parameters

- **cls_or_instance** (*Field*) – A field class or instance.
- **default** (*bool*) – Default value for serialization.
- **kwargs** – The same keyword arguments that *Field* receives.

Changed in version 2.0.0: The `allow_none` parameter now applies to deserialization and has the same semantics as the other fields.

```
default_error_messages = {u'invalid': u'Not a valid list.'}
```

```
get_value(attr, obj, accessor=None)
    Return the value for a given key from an object.
```

```
class argschema.fields.String(default=<marshmallow.missing>, attribute=None, load_from=None,
                               dump_to=None, error=None, validate=None, required=False,
                               allow_none=None, load_only=False, dump_only=False, missing=<marshmallow.missing>, error_messages=None, **metadata)
    Bases: marshmallow.fields.Field
```

A string field.

Parameters **kwargs** – The same keyword arguments that *Field* receives.

```
default_error_messages = {u'invalid': u'Not a valid string.'}
```

```
class argschema.fields.UUID(default=<marshmallow.missing>, attribute=None, load_from=None,
                              dump_to=None, error=None, validate=None, required=False,
                              allow_none=None, load_only=False, dump_only=False, missing=<marshmallow.missing>, error_messages=None, **metadata)
    Bases: marshmallow.fields.String
```

A UUID field.

```
default_error_messages = {u'invalid_uuid': u'Not a valid UUID.', u'invalid_guid': u'Not a valid UUID.'}
```

```
class argschema.fields.Number(as_string=False, **kwargs)
    Bases: marshmallow.fields.Field
```

Base class for number fields.

Parameters

- **as_string** (*bool*) – If True, format the serialized value as a string.
- **kwargs** – The same keyword arguments that *Field* receives.

```
default_error_messages = {u'invalid': u'Not a valid number.'}
```

```
num_type
    alias of float
```

serialize (*attr, obj, accessor=None*)

Pulls the value for the given key from the object and returns the serialized number representation. Return a string if *self.as_string=True*, otherwise return this field's *num_type*. Receives the same *args* and *kwargs* as *Field*.

class argschema.fields.**Integer** (*as_string=False, **kwargs*)

Bases: `marshmallow.fields.Number`

An integer field.

Parameters *kwargs* – The same keyword arguments that *Number* receives.

default_error_messages = {*u'invalid': u'Not a valid integer.'*}

num_type

alias of `int`

class argschema.fields.**Decimal** (*places=None, rounding=None, allow_nan=False, as_string=False, **kwargs*)

Bases: `marshmallow.fields.Number`

A field that (de)serializes to the Python `decimal.Decimal` type. It's safe to use when dealing with money values, percentages, ratios or other numbers where precision is critical.

Warning: This field serializes to a *decimal.Decimal* object by default. If you need to render your data as JSON, keep in mind that the *json* module from the standard library does not encode *decimal.Decimal*. Therefore, you must use a JSON library that can handle decimals, such as *simplejson*, or serialize to a string by passing *as_string=True*.

Warning: If a JSON *float* value is passed to this field for deserialization it will first be cast to its corresponding *string* value before being deserialized to a *decimal.Decimal* object. The default `__str__` implementation of the built-in Python *float* type may apply a destructive transformation upon its input data and therefore cannot be relied upon to preserve precision. To avoid this, you can instead pass a JSON *string* to be deserialized directly.

Parameters

- **places** (*int*) – How many decimal places to quantize the value. If *None*, does not quantize the value.
- **rounding** – How to round the value during quantize, for example *decimal.ROUND_UP*. If *None*, uses the rounding value from the current thread's context.
- **allow_nan** (*bool*) – If *True*, *NaN*, *Infinity* and *-Infinity* are allowed, even though they are illegal according to the JSON specification.
- **as_string** (*bool*) – If *True*, serialize to a string instead of a Python *decimal.Decimal* type.
- **kwargs** – The same keyword arguments that *Number* receives.

New in version 1.2.0.

default_error_messages = {*u'special': u'Special numeric values are not permitted.'*}

num_type

alias of *Decimal*

```
class argschema.fields.Boolean (default=<marshmallow.missing>,          attribute=None,
                                load_from=None, dump_to=None, error=None, validate=None,
                                required=False, allow_none=None, load_only=False,
                                dump_only=False, missing=<marshmallow.missing>, error_
                                ror_messages=None, **metadata)
```

Bases: `marshmallow.fields.Field`

A boolean field.

Parameters `kwargs` – The same keyword arguments that `Field` receives.

default_error_messages = {u'invalid': u'Not a valid boolean.'}

falsy = set([0, u'False', u'F', u'f', u'FALSE', u'0', u'false'])

truthy = set([1, u'true', u'1', u't', u'True', u'TRUE', u'T'])

```
class argschema.fields.FormattedString (src_str, *args, **kwargs)
```

Bases: `marshmallow.fields.Field`

Interpolate other values from the object into this field. The syntax for the source string is the same as the string `str.format` method from the python stdlib.

```
class UserSchema (Schema):
    name = fields.String()
    greeting = fields.FormattedString('Hello {name}')

ser = UserSchema()
res = ser.dump(user)
res.data # => {'name': 'Monty', 'greeting': 'Hello Monty'}
```

default_error_messages = {u'format': u'Cannot format string with given data.'}

```
class argschema.fields.Float (as_string=False, **kwargs)
```

Bases: `marshmallow.fields.Number`

A double as IEEE-754 double precision string.

Parameters

- **as_string** (*bool*) – If True, format the value as a string.
- **kwargs** – The same keyword arguments that `Number` receives.

num_type

alias of float

```
class argschema.fields.DateTime (format=None, **kwargs)
```

Bases: `marshmallow.fields.Field`

A formatted datetime string in UTC.

Example: '2014-12-22T03:12:58.019077+00:00'

Timezone-naive *datetime* objects are converted to UTC (+00:00) by `Schema.dump`. `Schema.load` returns *datetime* objects that are timezone-aware.

Parameters

- **format** (*str*) – Either "rfc" (for RFC822), "iso" (for ISO8601), or a date format string. If *None*, defaults to "iso".
- **kwargs** – The same keyword arguments that `Field` receives.

DATEFORMAT_DESERIALIZATION_FUNCS = {u'rfc': <function from_rfc>, u'rfc822': <function from_rfc>, u'iso': <fun

```
DATEFORMAT_SERIALIZATION_FUNCS = {u'rfc': <function rfcformat>, u'rfc822': <function rfcformat>, u'iso': <function isoformat>}
```

```
DEFAULT_FORMAT = u'iso'
```

```
default_error_messages = {u'invalid': u'Not a valid datetime.', u'format': u'"{input}" cannot be formatted as a datetime.'}
```

```
localtime = False
```

```
class argschema.fields.LocalDateTime (format=None, **kwargs)
```

```
Bases: marshmallow.fields.DateTime
```

A formatted datetime string in localized time, relative to UTC.

```
ex. "Sun, 10 Nov 2013 08:23:45 -0600"
```

Takes the same arguments as `DateTime`.

```
localtime = True
```

```
class argschema.fields.Time (default=<marshmallow.missing>, attribute=None, load_from=None,
                             dump_to=None, error=None, validate=None, required=False,
                             allow_none=None, load_only=False, dump_only=False, missing=<marshmallow.missing>, error_messages=None, **metadata)
```

```
Bases: marshmallow.fields.Field
```

ISO8601-formatted time string.

Parameters `kwargs` – The same keyword arguments that `Field` receives.

```
default_error_messages = {u'invalid': u'Not a valid time.', u'format': u'"{input}" cannot be formatted as a time.'}
```

```
class argschema.fields.Date (default=<marshmallow.missing>, attribute=None, load_from=None,
                             dump_to=None, error=None, validate=None, required=False,
                             allow_none=None, load_only=False, dump_only=False, missing=<marshmallow.missing>, error_messages=None, **metadata)
```

```
Bases: marshmallow.fields.Field
```

ISO8601-formatted date string.

Parameters `kwargs` – The same keyword arguments that `Field` receives.

```
default_error_messages = {u'invalid': u'Not a valid date.', u'format': u'"{input}" cannot be formatted as a date.'}
```

```
class argschema.fields.TimeDelta (precision=u'seconds', error=None, **kwargs)
```

```
Bases: marshmallow.fields.Field
```

A field that (de)serializes a `datetime.timedelta` object to an integer and vice versa. The integer can represent the number of days, seconds or microseconds.

Parameters

- **precision** (`str`) – Influences how the integer is interpreted during (de)serialization. Must be 'days', 'seconds' or 'microseconds'.
- **error** (`str`) – Error message stored upon validation failure.
- **kwargs** – The same keyword arguments that `Field` receives.

Changed in version 2.0.0: Always serializes to an integer value to avoid rounding errors. Add `precision` parameter.

```
DAYS = u'days'
```

```
MICROSECONDS = u'microseconds'
```

```
SECONDS = u'seconds'
```

```
default_error_messages = {u'invalid': u'Not a valid period of time.', u'format': u'"{input!r}" cannot be formatted as a timedelta.'}
```

```
class argschema.fields.Url (relative=False, schemes=None, **kwargs)
    Bases: marshmallow.fields.ValidatedField,marshmallow.fields.String
```

A validated URL field. Validation occurs during both serialization and deserialization.

Parameters

- **default** – Default value for the field if the attribute is not set.
- **attribute** (*str*) – The name of the attribute to get the value from. If *None*, assumes the attribute has the same name as the field.
- **relative** (*bool*) – Allow relative URLs.
- **kwargs** – The same keyword arguments that *String* receives.

```
default_error_messages = {u'invalid': u'Not a valid URL.'}
```

```
argschema.fields.URL
    alias of Url
```

```
class argschema.fields.Email (*args, **kwargs)
    Bases: marshmallow.fields.ValidatedField,marshmallow.fields.String
```

A validated email field. Validation occurs during both serialization and deserialization.

Parameters

- **args** – The same positional arguments that *String* receives.
- **kwargs** – The same keyword arguments that *String* receives.

```
default_error_messages = {u'invalid': u'Not a valid email address.'}
```

```
class argschema.fields.Method (serialize=None, deserialize=None, method_name=None, **kwargs)
    Bases: marshmallow.fields.Field
```

A field that takes the value returned by a *Schema* method.

Parameters

- **method_name** (*str*) – The name of the Schema method from which to retrieve the value. The method must take an argument *obj* (in addition to *self*) that is the object to be serialized.
- **deserialize** (*str*) – Optional name of the Schema method for deserializing a value. The method must take a single argument *value*, which is the value to deserialize.

Changed in version 2.0.0: Removed optional *context* parameter on methods. Use *self.context* instead.

Changed in version 2.3.0: Deprecated *method_name* parameter in favor of *serialize* and allow *serialize* to not be passed at all.

```
class argschema.fields.Function (serialize=None, deserialize=None, func=None, **kwargs)
    Bases: marshmallow.fields.Field
```

A field that takes the value returned by a function.

Parameters

- **serialize** (*callable*) – A callable from which to retrieve the value. The function must take a single argument *obj* which is the object to be serialized. It can also optionally take a *context* argument, which is a dictionary of context variables passed to the serializer. If no callable is provided then the `load_only` flag will be set to `True`.

- **deserialize** (*callable*) – A callable from which to retrieve the value. The function must take a single argument *value* which is the value to be deserialized. It can also optionally take a *context* argument, which is a dictionary of context variables passed to the deserializer. If no callable is provided then ``value`` will be passed through unchanged.
- **func** (*callable*) – This argument is to be deprecated. It exists for backwards compatibility. Use `serialize` instead.

Changed in version 2.3.0: Deprecated `func` parameter in favor of `serialize`.

`argschema.fields.Str`
alias of *String*

`argschema.fields.Bool`
alias of *Boolean*

`argschema.fields.Int`
alias of *Integer*

class `argschema.fields.Constant` (*constant*, ***kwargs*)
Bases: `marshmallow.fields.Field`

A field that (de)serializes to a preset constant. If you only want the constant added for serialization or deserialization, you should use `dump_only=True` or `load_only=True` respectively.

Parameters `constant` – The constant to return for the field attribute.

New in version 2.0.0.

class `argschema.fields.OutputFile` (*default=<marshmallow.missing>*, *attribute=None*,
load_from=None, *dump_to=None*, *error=None*, *validate=None*, *required=False*, *allow_none=None*,
load_only=False, *dump_only=False*, *missing=<marshmallow.missing>*, *error_messages=None*, ***metadata*)
Bases: `marshmallow.fields.String`

OutputFile `marshmallow.fields.Str` subclass which is a path to a file location that can be written to by the current user (presently tested by opening a temporary file to that location)

class `argschema.fields.InputDir` (*default=<marshmallow.missing>*, *attribute=None*,
load_from=None, *dump_to=None*, *error=None*, *validate=None*, *required=False*, *allow_none=None*, *load_only=False*,
dump_only=False, *missing=<marshmallow.missing>*, *error_messages=None*, ***metadata*)
Bases: `marshmallow.fields.String`

InputDir is `marshmallow.fields.Str` subclass which is a path to a directory that exists and that the user can access (presently checked with `os.access`)

class `argschema.fields.InputFile` (*default=<marshmallow.missing>*, *attribute=None*,
load_from=None, *dump_to=None*, *error=None*, *validate=None*, *required=False*, *allow_none=None*, *load_only=False*,
dump_only=False, *missing=<marshmallow.missing>*, *error_messages=None*, ***metadata*)
Bases: `marshmallow.fields.String`

InputFile is a `marshmallow.fields.Str` subclass which is a path to a file location which can be read by the user (presently passes `os.path.isfile` and `os.access = R_OK`)

class `argschema.fields.OutputDir` (*mode=None*, **args*, ***kwargs*)
Bases: `marshmallow.fields.String`

OutputDir is a `marshmallow.fields.Str` subclass which is a path to a location where this module will write files. Validation will check that the directory exists and create the directory if it is not present, and will fail validation if the directory cannot be created or cannot be written to.

Parameters

- **mode** (*str*) – mode to create directory
- ***args** – same as passed to `marshmallow.fields.Str`
- ****kwargs** – same as passed to `marshmallow.fields.Str`

class `argschema.fields.NumpyArray` (*dtype=None, *args, **kwargs*)
Bases: `marshmallow.fields.List`

`NumpyArray` is a `marshmallow.fields.List` subclass which will convert any numpy compatible set of lists into a numpy array after deserialization and convert it back to a list when serializing,

Parameters **dtype** (*numpy.Dtype*) – dtype specifying the desired data type. if dtype is given the array will be converted to the type, otherwise numpy will decide what type it should be. (Default=None)

class `argschema.fields.OptionList` (*options, **kwargs*)
Bases: `marshmallow.fields.Field`

OptionList is a marshmallow field which enforces that this field is one of a finite set of options. `OptionList(options,*args,**kwargs)` where options is a list of json compatible options which this option will be enforced to belong

Parameters

- **options** (*list*) – A list of python objects of which this field must be one of
- **kwargs** (*dict*) – the same as any *Field* receives

class `argschema.fields.LogLevel` (***kwargs*)
Bases: `marshmallow.fields.String`

`LogLevel` is a field type that provides a setting for the loglevel of `python.logging`. This class will both validate the input and also *set* the input globally. In simple scenarios, a module will not have to do any manipulation of loglevel.

options = ['FATAL', 'CRITICAL', 'ERROR', 'WARN', 'WARNING', 'INFO', 'DEBUG']

class `argschema.fields.Slice` (***kwargs*)
Bases: `marshmallow.fields.String`

`Slice` is a `:class:'marshmallow.fields.Str'` field that supports a range or slice argument for selecting some subset of a larger dataset. The syntax is identical to numpy slicing. Examples: "10:20", "40", ":30", "10:2:40"

Parameters **kwargs** – the same as any `Str` receive

Submodules

argschema.argschema_parser module

Module that contains the base class `ArgSchemaParser` which should be subclassed when using this library

```
class argschema.argschema_parser.ArgSchemaParser (input_data=None, schema_type=None,
                                                    output_schema_type=None,
                                                    args=None, logger_name='argschema.argschema_parser')
```

Bases: object

The main class you should sub-class to write your own argschema module. Takes input_data, reference to a input_json and the command line inputs and parses out the parameters and validates them against the schema_type specified.

To subclass this and make a new schema be default, simply override the default_schema and default_output_schema attributes of this class.

Parameters

- **input_data** (*dict or None*) – dictionary parameters instead of –input_json
- **schema_type** (*schemas.ArgSchema*) – the schema to use to validate the parameters
- **output_schema_type** (*marshmallow.Schema*) – the schema to use to validate the output_json, used by self.output
- **args** (*list or None*) – command line arguments passed to the module, if None use argparse to parse the command line, set to [] if you want to bypass command line parsing
- **logger_name** (*str*) – name of logger from the logging module you want to instantiate 'argschema'

Raises `marshmallow.ValidationError` – If the combination of input_json, input_data and command line arguments do not pass the validation of the schema

Note: This class takes a ArgSchema as an input to parse inputs , with a default schema of type *ArgSchema*

default_output_schema = None

default_schema

alias of ArgSchema

static initialize_logger (*name, log_level*)

initializes the logger to a level with a name logger = initialize_logger(name, log_level)

Parameters

- **name** (*str*) – name of the logger
- **log_level** –

Returns a logger set with the name and level specified

Return type logging.Logger

load_schema_with_defaults (*schema, args*)

method for deserializing the arguments dictionary (args) given the schema (schema) making sure that the default values have been filled in.

Parameters

- **args** (*dict*) – a dictionary of input arguments
- **schema** –

Returns a deserialized dictionary of the parameters converted through marshmallow

Return type dict

Raises `marshmallow.ValidationError` – If this schema contains nested schemas that don't subclass `argschema.DefaultSchema` because these won't work with loading defaults.

output (*d*)

method for outputting dictionary to the `output_json` file path after validating it through the `output_schema_type`

Parameters *d* (*dict*) – output dictionary to output to `self.mod['output_json']` location

Raises `marshmallow.ValidationError` – If any of the output dictionary doesn't meet the output schema

`argschema.argschema_parser.contains_non_default_schemas` (*schema*, *schema_list*=[])
returns True if this schema contains a schema which was not an instance of `DefaultSchema`

Parameters

- **schema** (*marshmallow.Schema*) – schema to check
- **schema_list** – (Default value = [])

Returns does this schema only contain schemas which are subclassed from `schemas.DefaultSchema`

Return type bool

`argschema.argschema_parser.fill_defaults` (*schema*, *args*)

DEPRECATED, function to fill in default values from schema into args bug: goes into an infinite loop when there is a recursively defined schema

Parameters

- **schema** (*marshmallow.Schema*) – schema to get defaults from
- **args** –

Returns dictionary with missing default values filled in

Return type dict

`argschema.argschema_parser.is_recursive_schema` (*schema*, *schema_list*=[])
returns true if this schema contains recursive elements

Parameters

- **schema** (*marshmallow.Schema*) – schema to check
- **schema_list** – (Default value = [])

Returns does this schema contain any recursively defined schemas

Return type bool

argschema.deprecated module

```
class argschema.deprecated.JsonModule (input_data=None,      schema_type=None,      out-
                                       put_schema_type=None,  args=None,      log-
                                       ger_name='argschema.argschema_parser')
```

Bases: `argschema.argschema_parser.ArgSchemaParser`

deprecated name of `ArgSchemaParser`

Note: This class takes a `ArgSchema` as an input to parse inputs , with a default schema of type `ArgSchema`

class `argschema.deprecated.ModuleParameters` (*extra=None, only=(), exclude=(), prefix=u'', strict=None, many=False, context=None, load_only=(), dump_only=(), partial=False*)

Bases: `argschema.schemas.ArgSchema`

deprecated name of ArgSchema

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 2.1: ModuleParameters

key	description	default	field_type	json_type
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

argschema.schemas module

class `argschema.schemas.ArgSchema` (*extra=None, only=(), exclude=(), prefix=u'', strict=None, many=False, context=None, load_only=(), dump_only=(), partial=False*)

Bases: `argschema.schemas.DefaultSchema`

The base marshmallow schema used by ArgSchemaParser to identify input_json and output_json files and the log_level

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 2.2: ArgSchema

key	description	default	field_type	json_type
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

class `argschema.schemas.DefaultSchema` (*extra=None, only=(), exclude=(), prefix=u'', strict=None, many=False, context=None, load_only=(), dump_only=(), partial=False*)

Bases: `marshmallow.schema.Schema`

mm.Schema class with support for making fields default to values defined by that field's arguments.

make_object (*in_data*)

marshmallow.pre_load decorated function for applying defaults on deserialization

Parameters *in_data* –

Returns a dictionary with default values applied

Return type dict

opts = <marshmallow.schema.SchemaOpts object>

argschema.utils module

module that contains argschema functions for converting marshmallow schemas to argparse and merging dictionaries from both systems

`argschema.utils.args_to_dict(argsobj)`

function to convert namespace returned by argparse into a nested dictionary

Parameters `argsobj` (`argparse.Namespace`) – Namespace object returned by standard `argparse.parse` function

Returns dictionary of namespace values where nesting elements uses ‘.’ to denote nesting of keys

Return type dict

`argschema.utils.build_schema_arguments(schema, arguments=None, path=None, description=None)`

given a jsonschema, create a dictionary of argparse arguments, by navigating down the Nested schema tree. (recursive function)

Parameters

- **schema** (`marshmallow.Schema`) – schema with `field.description` filled in with help values
- **arguments** (`list` or `None`) – list of argument group dictionaries to add to (see Returns) (Default value = `None`)
- **path** (`list` or `None`) – list of strings denoted where you are in the tree (Default value = `None`)
- **description** (`str` or `None`) – description for the argument group at this level of the tree

Returns List of argument group dictionaries, with keys ['title','description','args'] which contain the arguments for argparse. ‘args’ is an `OrderedDict` of dictionaries with keys of the argument names with kwargs to build an argparse argument

Return type list

`argschema.utils.get_description_from_field(field)`

get the description for this marshmallow field

Parameters `field` (`marshmallow.fields.field`) – field to get description

Returns description string (or `None`)

Return type str

`argschema.utils.merge_value(a, b, key, func=<built-in function add>)`

attempt to merge these dictionaries using function defined by `func` (default to `add`) raise an exception if this fails

Parameters

- **a** (`dict`) – one dictionary
- **b** (`dict`) – second dictionary
- **key** (`key`) – key to merge dictionary values on
- **func** (`a[key]`) – function that merges two values of this key Returns (Default value = `add`)
- **func** – merged version of values (Default value = `add`)

`argschema.utils.schema_argparser(schema)`
 given a jsonschema, build an `argparse.ArgumentParser`

Parameters `schema` (`argschema.schemas.ArgSchema`) – schema to build an `argparser` from

Returns the represents the schema

Return type `argparse.ArgumentParser`

`argschema.utils.smart_merge(a, b, path=None, merge_keys=None, overwrite_with_none=False)`
 updates dictionary `a` with values in dictionary `b` being careful not to write things with `None`, and performing a merge on `merge_keys`

Parameters

- `a(dict)` – dictionary to perform update on
- `b(dict)` – dictionary to perform update with
- `path(list)` – list of nested keys traversed so far (used for recursion) (Default value = `None`)
- `merge_keys(list)` – list of keys to do merging on (default `None`)
- `overwrite_with_none` – (Default value = `False`)

Returns a dictionary that is a updated with `b`'s values

Return type `dict`

argschema.autodoc module

`argschema.autodoc.process_schemas(app, what, name, obj, options, lines)`
 function designed to process a `sphinx.ext.autodoc` event as autodoc hook to alter docstring lines of `argschema` related classes, providing a table of parameters for schemas and links to the default schemas for `ArgSchemaParser` derived elements

use in sphnix `conf.py` as follows

```
from argschema.autodoc import process_schemas
def setup(app):
    app.connect('autodoc-process-docstring', process_schemas)
```

Module contents

`argschema`: flexible definition, validation and setting of parameters

`argschema.main()`

This contains the tests

test

test_first_test module

```
class test_first_test.BadExampleRecursiveSchema (extra=None, only=(), exclude=(), pre-
fix=u'', strict=None, many=False, con-
text=None, load_only=(), dump_only=(),
partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.1: BadExampleRecursiveSchema

key	description	default	field_type	json_type
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
out-put_json	file path to output json file	NA	<i>OutputFile</i>	unicode
tree	no description	(RE-REQUIRED)	<i>BadRecursiveSchema</i>	dict
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.BadRecursiveSchema (extra=None, only=(), exclude=(), prefix=u'',
strict=None, many=False, context=None,
load_only=(), dump_only=(), partial=False)
```

Bases: *marshmallow.schema.Schema*

Table 3.2: BadRecursiveSchema

key	description	default	field_type	json_type
children	children of this node	NA	<i>BadRecursiveSchema</i>	list
name	name of this node	anonymous	<i>String</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.ExampleRecursiveSchema (extra=None, only=(), exclude=(), prefix=u'',
                                             strict=None, many=False, context=None,
                                             load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.3: ExampleRecursiveSchema

key	description	default	field_type	json_type
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
tree	no description	(REQUIRED)	<i>RecursiveSchema</i>	dict
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.ModelFit (extra=None, only=(), exclude=(), prefix=u'', strict=None,
                                many=False, context=None, load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.DefaultSchema*

Table 3.4: ModelFit

key	description	default	field_type	json_type
fit_type	no description	NA	<i>String</i>	unicode
hof	no description	NA	<i>InputFile</i>	unicode
hof_fit	no description	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.MyExtension (extra=None, only=(), exclude=(), prefix=u'', strict=None,
                                   many=False, context=None, load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.DefaultSchema*

Table 3.5: MyExtension

key	description	default	field_type	json_type
a	a string	NA	<i>String</i>	unicode
c	an integer	10	<i>Integer</i>	int
b	an integer	NA	<i>Integer</i>	int
d	a list of integers	NA	<i>List</i>	int

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.MyExtensionOld (extra=None, only=(), exclude=(), prefix=u'', strict=None,
                                       many=False, context=None, load_only=(), dump_only=(), partial=False)
```

Bases: *marshmallow.schema.Schema*

Table 3.6: MyExtensionOld

key	description	default	field_type	json_type
a	a string	NA	<code>String</code>	unicode
c	an integer	10	<code>Integer</code>	int
b	an integer	NA	<code>Integer</code>	int
d	a list of integers	NA	<code>List</code>	int

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.MyShorterExtension (extra=None, only=(), exclude=(), prefix=u'',
strict=None, many=False, context=None,
load_only=(), dump_only=(), partial=False)
```

Bases: `argschema.schemas.ArgSchema`

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.7: MyShorterExtension

key	description	default	field_type	json_type
a	a string	NA	<code>String</code>	unicode
c	an integer	10	<code>Integer</code>	int
b	an integer	NA	<code>Integer</code>	int
log_level	set the logging level of the module	ERROR	<code>LogLevel</code>	unicode
d	a list of integers	NA	<code>List</code>	int
input_json	file path of input json file	NA	<code>InputFile</code>	unicode
output_json	file path to output json file	NA	<code>OutputFile</code>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.PopulationSelectionParameters (extra=None, only=(), ex-
clude=(), prefix=u'', strict=None,
many=False, context=None,
load_only=(), dump_only=(),
partial=False)
```

Bases: `argschema.schemas.ArgSchema`

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.8: PopulationSelectionParameters

key	description	default	field_type	json_type
paths	no description	NA	<code>PopulationSelectionPaths</code>	dict
out-put_json	file path to output json file	NA	<code>OutputFile</code>	unicode
log_level	set the logging level of the module	ERROR	<code>LogLevel</code>	unicode
input_json	file path of input json file	NA	<code>InputFile</code>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.PopulationSelectionPaths (extra=None, only=(), exclude=(), pre-
fix=u'', strict=None, many=False, con-
text=None, load_only=(), dump_only=(),
partial=False)
```

Bases: `argschema.schemas.DefaultSchema`

Table 3.9: PopulationSelectionPaths

key	description	default	field_type	json_type
fits	no description	NA	<i>ModelFit</i>	list

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.RecursiveSchema (extra=None, only=(), exclude=(), prefix=u'',
                                       strict=None, many=False, context=None, load_only=(),
                                       dump_only=(), partial=False)
```

Bases: *argschema.schemas.DefaultSchema*

Table 3.10: RecursiveSchema

key	description	default	field_type	json_type
children	children of this node	NA	<i>RecursiveSchema</i>	list
name	name of this node	anonymous	<i>String</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.SimpleExtension (extra=None, only=(), exclude=(), prefix=u'',
                                       strict=None, many=False, context=None, load_only=(),
                                       dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.11: SimpleExtension

key	description	default	field_type	json_type
test	no description	None	<i>MyExtension</i>	dict
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class test_first_test.SimpleExtensionOld (extra=None, only=(), exclude=(), prefix=u'',
                                          strict=None, many=False, context=None,
                                          load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.12: SimpleExtensionOld

key	description	default	field_type	json_type
test	no description	None	<i>MyExtensionOld</i>	dict
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
test_first_test.bad_test_recursive_schema()
```

```
test_first_test.simple_extension_file(tmpdir_factory)
```

```
test_first_test.test_bad_input_json_argparse()
```

```

test_first_test.test_bad_path()
test_first_test.test_david_example(tmpdir_factory)
test_first_test.test_log_catch()
test_first_test.test_recursive_schema()
test_first_test.test_simple_description()
test_first_test.test_simple_example(tmpdir)
test_first_test.test_simple_extension_fail()
test_first_test.test_simple_extension_old_pass()
test_first_test.test_simple_extension_pass()
test_first_test.test_simple_extension_required()
test_first_test.test_simple_extension_write_debug_level(simple_extension_file)
test_first_test.test_simple_extension_write_overwrite(simple_extension_file)
test_first_test.test_simple_extension_write_overwrite_list(simple_extension_file)
test_first_test.test_simple_extension_write_pass(simple_extension_file)

```

test_output module

```

class test_output.MyOutputSchema (extra=None, only=(), exclude=(), prefix=u'', strict=None,
                                   many=False, context=None, load_only=(), dump_only=(), partial=False)

```

Bases: *argschema.schemas.DefaultSchema*

Table 3.13: MyOutputSchema

key	description	default	field_type	json_type
a	a simple string	(REQUIRED)	<i>String</i>	unicode
b	a default integer	5	<i>Integer</i>	int
M	a numpy array of answers	(REQUIRED)	<i>NumpyArray</i>	?

opts = <marshmallow.schema.SchemaOpts object>

```

test_output.test_bad_output(tmpdir)
test_output.test_output(tmpdir)
test_output.test_output_unvalidated(tmpdir)

```

test_argschema_parser module

```

class test_argschema_parser.MyNestedSchema (extra=None, only=(), exclude=(), prefix=u'',
                                             strict=None, many=False, context=None,
                                             load_only=(), dump_only=(), partial=False)

```

Bases: *argschema.schemas.DefaultSchema*

Table 3.14: MyNestedSchema

key	description	default	field_type	json_type
two	a nested boolean	(REQUIRED)	<code>Boolean</code>	bool
one	nested integer	(REQUIRED)	<code>Integer</code>	int

opts = <marshmallow.schema.SchemaOpts object>

```
class test_argschema_parser.MyParser(input_data=None, schema_type=None, out-
                                     put_schema_type=None, args=None, log-
                                     ger_name='argschema.argschema_parser')
Bases: argschema.argschema_parser.ArgSchemaParser
```

Note: This class takes a ArgSchema as an input to parse inputs , with a default schema of type `MySchema`

default_schema
alias of `MySchema`

```
class test_argschema_parser.MySchema(extra=None, only=(), exclude=(), prefix=u'', strict=None,
                                     many=False, context=None, load_only=(), dump_only=(),
                                     partial=False)
Bases: argschema.schemas.ArgSchema
```

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.15: MySchema

key	description	default	field_type	json_type
a	parameter a	(REQUIRED)	<code>Integer</code>	int
b	optional b string parameter	my value	<code>String</code>	unicode
log_level	set the logging level of the module	ERROR	<code>LogLevel</code>	unicode
nest	a nested schema	NA	<code>MyNestedSchema</code>	dict
input_json	file path of input json file	NA	<code>InputFile</code>	unicode
output_json	file path to output json file	NA	<code>OutputFile</code>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
test_argschema_parser.test_my_parser()
```

test_utils module

```
class test_utils.BaseballSituation(extra=None, only=(), exclude=(), prefix=u'', strict=None,
                                   many=False, context=None, load_only=(), dump_only=(),
                                   partial=False)
Bases: argschema.schemas.ArgSchema
```

A description of a baseball situation

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.16: BaseballSituation

key	description	default	field_type	json_type
inning	inning (1-9)	(REQUIRED)	<i>Integer</i>	int
outs	number of outs (0-2)	(REQUIRED)	<i>Integer</i>	int
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
bottom	is it the bottom of the inning	(REQUIRED)	<i>Boolean</i>	bool
score_away	away team score (non-negative)	(REQUIRED)	<i>Integer</i>	int
pitcher	who is pitching	(REQUIRED)	<i>Player</i>	dict
strikes	how many strikes (0-2)	(REQUIRED)	<i>Integer</i>	int
input_json	file path of input json file	NA	<i>InputFile</i>	unicode
balls	number of balls (0-4)	0	<i>Integer</i>	int
batter	who is batting	(REQUIRED)	<i>Player</i>	dict
bases_occupied	which bases are occupied	NA	<i>List</i>	int
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
score_home	home team score (non-negative)	(REQUIRED)	<i>Integer</i>	int

opts = <marshmallow.schema.SchemaOpts object>

class test_utils.**Player** (*extra=None, only=(), exclude=(), prefix=u'', strict=None, many=False, context=None, load_only=(), dump_only=(), partial=False*)

Bases: *argschema.schemas.DefaultSchema*

player information

Table 3.17: Player

key	description	default	field_type	json_type
number	player's number (must be >0)	(REQUIRED)	<i>Integer</i>	int
name	players name	(REQUIRED)	<i>String</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
test_utils.test_merge_value_add()
test_utils.test_merge_value_fail()
test_utils.test_merge_value_subtract()
test_utils.test_schema_argparser_with_baseball()
test_utils.test_smart_merge()
test_utils.test_smart_merge_add()
test_utils.test_smart_merge_nested()
test_utils.test_smart_merge_none()
test_utils.test_smart_merge_not_none()
test_utils.test_smart_merge_same()
```

test_autodoc module

fields package

Submodules

fields.test_deprecated module

```
class fields.test_deprecated.OptionSchema (extra=None, only=(), exclude=(), prefix=u'',
strict=None, many=False, context=None,
load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.18: OptionSchema

key	description	default	field_type	json_type
a	one of 1,2,3	(REQUIRED)	OptionList	?
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

fields.test_deprecated.test_bad_option()

fields.test_deprecated.test_option_list()

fields.test_files module

```
class fields.test_files.BasicInputDir (extra=None, only=(), exclude=(), prefix=u'',
strict=None, many=False, context=None, load_only=(),
dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.19: BasicInputDir

key	description	default	field_type	json_type
input_dir	a simple file	(REQUIRED)	<i>InputDir</i>	unicode
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class fields.test_files.BasicInputFile (extra=None, only=(), exclude=(), prefix=u'',
strict=None, many=False, context=None,
load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.20: BasicInputFile

key	description	default	field_type	json_type
input_json	file path of input json file	NA	<i>InputFile</i>	unicode
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_file	a simple file	(REQUIRED)	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class fields.test_files.BasicOutputDir (extra=None, only=(), exclude=(), prefix=u'',
                                         strict=None, many=False, context=None,
                                         load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.21: BasicOutputDir

key	description	default	field_type	json_type
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
output_dir	basic output dir	(REQUIRED)	<i>OutputDir</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class fields.test_files.BasicOutputFile (extra=None, only=(), exclude=(), prefix=u'',
                                           strict=None, many=False, context=None,
                                           load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.22: BasicOutputFile

key	description	default	field_type	json_type
output_file	a simple output file	(REQUIRED)	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
class fields.test_files.ModeOutputDirSchema (extra=None, only=(), exclude=(), prefix=u'',
                                              strict=None, many=False, context=None,
                                              load_only=(), dump_only=(), partial=False)
```

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.23: ModeOutputDirSchema

key	description	default	field_type	json_type
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
output_dir	775 output directory	(REQUIRED)	<i>OutputDir</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
fields.test_files.test_access_inputfile_failed()
fields.test_files.test_bad_inputdir()
fields.test_files.test_basic_inputdir(tmpdir)
fields.test_files.test_enoent_outputfile_failed()
fields.test_files.test_failed_mode(tmpdir)
fields.test_files.test_inputdir_no_access(tmpdir)
fields.test_files.test_mode_output_osdir(tmpdir)
fields.test_files.test_output_dir_bad_location()
fields.test_files.test_output_dir_bad_permission()
fields.test_files.test_output_dir_basic()
fields.test_files.test_output_file_relative()
fields.test_files.test_output_path(tmpdir)
fields.test_files.test_output_path_cannot_write()
fields.test_files.test_output_path_noapath()
fields.test_files.test_outputfile_no_write(tmpdir)
fields.test_files.test_outputfile_not_a_path()
fields.test_files.test_relative_file_input()
fields.test_files.test_relative_file_input_failed()
```

fields.test_loglevel module

```
fields.test_loglevel.test_bad_option()
fields.test_loglevel.test_option_list()
```

fields.test_numpyarray module

class fields.test_numpyarray.**NumpyFileuint16** (*extra=None, only=(), exclude=(), prefix=u'', strict=None, many=False, context=None, load_only=(), dump_only=(), partial=False*)

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.24: NumpyFileuint16

key	description	default	field_type	json_type
a	list of lists representing a uint16 numpy array	(RE-REQUIRED)	<i>NumpyArray</i>	?
output_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
fields.test_numpyarray.test_bad_data()
fields.test_numpyarray.test_bad_shape()
fields.test_numpyarray.test_numpy()
fields.test_numpyarray.test_serialize()
```

fields.test_slice module

class fields.test_slice.**SliceSchema** (*extra=None, only=(), exclude=(), prefix=u'', strict=None, many=False, context=None, load_only=(), dump_only=(), partial=False*)

Bases: *argschema.schemas.ArgSchema*

This schema is designed to be a schema_type for an ArgSchemaParser object

Table 3.25: SliceSchema

key	description	default	field_type	json_type
a	slice the dataset	slice(None, None, None)	<i>Slice</i>	unicode
out-put_json	file path to output json file	NA	<i>OutputFile</i>	unicode
log_level	set the logging level of the module	ERROR	<i>LogLevel</i>	unicode
input_json	file path of input json file	NA	<i>InputFile</i>	unicode

opts = <marshmallow.schema.SchemaOpts object>

```
fields.test_slice.test_bad_slice()
fields.test_slice.test_slice()
```

Module contents

Indices and tables

- `genindex`
- `modindex`
- `search`

Support/Contribute

We are planning on occasional updating this tool with no fixed schedule. Community involvement is encouraged through both issues and pull requests. Please make pull requests against the dev branch, as we will test changes there before merging into master.

- Issue Tracker: <https://github.com/AllenInstitute/argschema/issues>
- Source Code: <https://github.com/AllenInstitute/argschema>

License

The project is licensed under the BSD Clause 2 license with a non-commercial use clause.

a

- `argschema`, [25](#)
- `argschema.argschema_parser`, [20](#)
- `argschema.autodoc`, [25](#)
- `argschema.deprecated`, [22](#)
- `argschema.fields`, [11](#)
- `argschema.fields.files`, [9](#)
- `argschema.fields.loglevel`, [10](#)
- `argschema.fields.numpyarrays`, [10](#)
- `argschema.fields.slice`, [11](#)
- `argschema.schemas`, [23](#)
- `argschema.utils`, [24](#)

f

- `fields`, [37](#)
- `fields.test_deprecated`, [34](#)
- `fields.test_files`, [34](#)
- `fields.test_loglevel`, [36](#)
- `fields.test_numpyarray`, [36](#)
- `fields.test_slice`, [37](#)

t

- `test_argschema_parser`, [31](#)
- `test_first_test`, [27](#)
- `test_output`, [31](#)
- `test_utils`, [32](#)

A

args_to_dict() (in module argschema.utils), 24
 ArgSchema (class in argschema.schemas), 23
 argschema (module), 25
 argschema.argschema_parser (module), 20
 argschema.autodoc (module), 25
 argschema.deprecated (module), 22
 argschema.fields (module), 11
 argschema.fields.files (module), 9
 argschema.fields.loglevel (module), 10
 argschema.fields.numpyarrays (module), 10
 argschema.fields.slice (module), 11
 argschema.schemas (module), 23
 argschema.utils (module), 24
 ArgSchemaParser (class in argschema.argschema_parser), 20

B

bad_test_recursive_schema() (in module test_first_test), 30
 BadExampleRecursiveSchema (class in test_first_test), 27
 BadRecursiveSchema (class in test_first_test), 27
 BaseballSituation (class in test_utils), 32
 BasicInputDir (class in fields.test_files), 34
 BasicInputFile (class in fields.test_files), 34
 BasicOutputDir (class in fields.test_files), 35
 BasicOutputFile (class in fields.test_files), 35
 Bool (in module argschema.fields), 19
 Boolean (class in argschema.fields), 15
 build_schema_arguments() (in module argschema.utils), 24

C

Constant (class in argschema.fields), 19
 contains_non_default_schemas() (in module argschema.argschema_parser), 22
 context (argschema.fields.Field attribute), 12

D

Date (class in argschema.fields), 17
 DATEFORMAT_DESERIALIZATION_FUNCS (argschema.fields.DateTime attribute), 16
 DATEFORMAT_SERIALIZATION_FUNCS (argschema.fields.DateTime attribute), 16
 DateTime (class in argschema.fields), 16
 DAYS (argschema.fields.TimeDelta attribute), 17
 Decimal (class in argschema.fields), 15
 default_error_messages (argschema.fields.Boolean attribute), 16
 default_error_messages (argschema.fields.Date attribute), 17
 default_error_messages (argschema.fields.DateTime attribute), 17
 default_error_messages (argschema.fields.Decimal attribute), 15
 default_error_messages (argschema.fields.Dict attribute), 13
 default_error_messages (argschema.fields.Email attribute), 18
 default_error_messages (argschema.fields.Field attribute), 12
 default_error_messages (argschema.fields.FormattedString attribute), 16
 default_error_messages (argschema.fields.Integer attribute), 15
 default_error_messages (argschema.fields.List attribute), 14
 default_error_messages (argschema.fields.Nested attribute), 13
 default_error_messages (argschema.fields.Number attribute), 14
 default_error_messages (argschema.fields.String attribute), 14
 default_error_messages (argschema.fields.Time attribute), 17
 default_error_messages (argschema.fields.TimeDelta attribute), 17

default_error_messages (argschema.fields.Url attribute), 18

default_error_messages (argschema.fields.UUID attribute), 14

DEFAULT_FORMAT (argschema.fields.DateTime attribute), 17

default_output_schema (argschema.argschema_parser.ArgSchemaParser attribute), 21

default_schema (argschema.argschema_parser.ArgSchemaParser attribute), 21

default_schema (test_argschema_parser.MyParser attribute), 32

DefaultSchema (class in argschema.schemas), 23

deserialize() (argschema.fields.Field method), 12

Dict (class in argschema.fields), 13

E

Email (class in argschema.fields), 18

ExampleRecursiveSchema (class in test_first_test), 28

F

fail() (argschema.fields.Field method), 12

falsy (argschema.fields.Boolean attribute), 16

Field (class in argschema.fields), 11

fields (module), 37

fields.test_deprecated (module), 34

fields.test_files (module), 34

fields.test_loglevel (module), 36

fields.test_numpyarray (module), 36

fields.test_slice (module), 37

fill_defaults() (in module argschema.argschema_parser), 22

Float (class in argschema.fields), 16

FormattedString (class in argschema.fields), 16

Function (class in argschema.fields), 18

G

get_description_from_field() (in module argschema.utils), 24

get_value() (argschema.fields.Field method), 12

get_value() (argschema.fields.List method), 14

I

initialize_logger() (argschema.argschema_parser.ArgSchemaParser static method), 21

InputDir (class in argschema.fields), 19

InputDir (class in argschema.fields.files), 9

InputFile (class in argschema.fields), 19

InputFile (class in argschema.fields.files), 9

Int (in module argschema.fields), 19

Integer (class in argschema.fields), 15

is_recursive_schema() (in module argschema.argschema_parser), 22

J

JsonModule (class in argschema.deprecated), 22

L

List (class in argschema.fields), 14

load_schema_with_defaults() (argschema.argschema_parser.ArgSchemaParser method), 21

LocalDateTime (class in argschema.fields), 17

localtime (argschema.fields.DateTime attribute), 17

localtime (argschema.fields.LocalDateTime attribute), 17

LogLevel (class in argschema.fields), 20

LogLevel (class in argschema.fields.loglevel), 10

M

main() (in module argschema), 25

make_object() (argschema.schemas.DefaultSchema method), 23

merge_value() (in module argschema.utils), 24

Method (class in argschema.fields), 18

MICROSECONDS (argschema.fields.TimeDelta attribute), 17

ModelFit (class in test_first_test), 28

ModeOutputDirSchema (class in fields.test_files), 35

ModuleParameters (class in argschema.deprecated), 22

MyExtension (class in test_first_test), 28

MyExtensionOld (class in test_first_test), 28

MyNestedSchema (class in test_argschema_parser), 31

MyOutputSchema (class in test_output), 31

MyParser (class in test_argschema_parser), 32

MySchema (class in test_argschema_parser), 32

MyShorterExtension (class in test_first_test), 29

N

Nested (class in argschema.fields), 12

num_type (argschema.fields.Decimal attribute), 15

num_type (argschema.fields.Float attribute), 16

num_type (argschema.fields.Integer attribute), 15

num_type (argschema.fields.Number attribute), 14

Number (class in argschema.fields), 14

NumpyArray (class in argschema.fields), 20

NumpyArray (class in argschema.fields.numpyarrays), 10

NumpyFileuint16 (class in fields.test_numpyarray), 36

O

OptionList (class in argschema.fields), 20

options (argschema.fields.LogLevel attribute), 20

options (argschema.fields.loglevel.LogLevel attribute), 10

OptionSchema (class in fields.test_deprecated), 34

opts (argschema.deprecated.ModuleParameters attribute), 23

opts (argschema.schemas.ArgSchema attribute), 23

opts (argschema.schemas.DefaultSchema attribute), 23

[opts \(fields.test_deprecated.OptionSchema attribute\), 34](#)
[opts \(fields.test_files.BasicInputDir attribute\), 34](#)
[opts \(fields.test_files.BasicInputFile attribute\), 35](#)
[opts \(fields.test_files.BasicOutputDir attribute\), 35](#)
[opts \(fields.test_files.BasicOutputFile attribute\), 35](#)
[opts \(fields.test_files.ModeOutputDirSchema attribute\), 35](#)
[opts \(fields.test_numpyarray.NumpyFileuint16 attribute\), 36](#)
[opts \(fields.test_slice.SliceSchema attribute\), 37](#)
[opts \(test_argschema_parser.MyNestedSchema attribute\), 32](#)
[opts \(test_argschema_parser.MySchema attribute\), 32](#)
[opts \(test_first_test.BadExampleRecursiveSchema attribute\), 27](#)
[opts \(test_first_test.BadRecursiveSchema attribute\), 28](#)
[opts \(test_first_test.ExampleRecursiveSchema attribute\), 28](#)
[opts \(test_first_test.ModelFit attribute\), 28](#)
[opts \(test_first_test.MyExtension attribute\), 28](#)
[opts \(test_first_test.MyExtensionOld attribute\), 29](#)
[opts \(test_first_test.MyShorterExtension attribute\), 29](#)
[opts \(test_first_test.PopulationSelectionParameters attribute\), 29](#)
[opts \(test_first_test.PopulationSelectionPaths attribute\), 30](#)
[opts \(test_first_test.RecursiveSchema attribute\), 30](#)
[opts \(test_first_test.SimpleExtension attribute\), 30](#)
[opts \(test_first_test.SimpleExtensionOld attribute\), 30](#)
[opts \(test_output.MyOutputSchema attribute\), 31](#)
[opts \(test_utils.BaseballSituation attribute\), 33](#)
[opts \(test_utils.Player attribute\), 33](#)
[output\(\) \(argschema.argschema_parser.ArgSchemaParser method\), 22](#)
[OutputDir \(class in argschema.fields\), 19](#)
[OutputDir \(class in argschema.fields.files\), 10](#)
[OutputFile \(class in argschema.fields\), 19](#)
[OutputFile \(class in argschema.fields.files\), 10](#)

P

[Player \(class in test_utils\), 33](#)
[PopulationSelectionParameters \(class in test_first_test\), 29](#)
[PopulationSelectionPaths \(class in test_first_test\), 29](#)
[process_schemas\(\) \(in module argschema.autodoc\), 25](#)

R

[Raw \(class in argschema.fields\), 12](#)
[RecursiveSchema \(class in test_first_test\), 30](#)
[root \(argschema.fields.Field attribute\), 12](#)

S

[schema \(argschema.fields.Nested attribute\), 13](#)
[schema_argparser\(\) \(in module argschema.utils\), 24](#)

[SECONDS \(argschema.fields.TimeDelta attribute\), 17](#)
[serialize\(\) \(argschema.fields.Field method\), 12](#)
[serialize\(\) \(argschema.fields.Number method\), 14](#)
[simple_extension_file\(\) \(in module test_first_test\), 30](#)
[SimpleExtension \(class in test_first_test\), 30](#)
[SimpleExtensionOld \(class in test_first_test\), 30](#)
[Slice \(class in argschema.fields\), 20](#)
[Slice \(class in argschema.fields.slice\), 11](#)
[SliceSchema \(class in fields.test_slice\), 37](#)
[smart_merge\(\) \(in module argschema.utils\), 25](#)
[Str \(in module argschema.fields\), 19](#)
[String \(class in argschema.fields\), 14](#)

T

[test_access_inputfile_failed\(\) \(in module fields.test_files\), 36](#)
[test_argschema_parser \(module\), 31](#)
[test_bad_data\(\) \(in module fields.test_numpyarray\), 37](#)
[test_bad_input_json_argparse\(\) \(in module test_first_test\), 30](#)
[test_bad_inputdir\(\) \(in module fields.test_files\), 36](#)
[test_bad_option\(\) \(in module fields.test_deprecated\), 34](#)
[test_bad_option\(\) \(in module fields.test_loglevel\), 36](#)
[test_bad_output\(\) \(in module test_output\), 31](#)
[test_bad_path\(\) \(in module test_first_test\), 30](#)
[test_bad_shape\(\) \(in module fields.test_numpyarray\), 37](#)
[test_bad_slice\(\) \(in module fields.test_slice\), 37](#)
[test_basic_inputdir\(\) \(in module fields.test_files\), 36](#)
[test_david_example\(\) \(in module test_first_test\), 31](#)
[test_enoent_outputfile_failed\(\) \(in module fields.test_files\), 36](#)
[test_failed_mode\(\) \(in module fields.test_files\), 36](#)
[test_first_test \(module\), 27](#)
[test_inputdir_no_access\(\) \(in module fields.test_files\), 36](#)
[test_log_catch\(\) \(in module test_first_test\), 31](#)
[test_merge_value_add\(\) \(in module test_utils\), 33](#)
[test_merge_value_fail\(\) \(in module test_utils\), 33](#)
[test_merge_value_subtract\(\) \(in module test_utils\), 33](#)
[test_mode_output_osdir\(\) \(in module fields.test_files\), 36](#)
[test_my_parser\(\) \(in module test_argschema_parser\), 32](#)
[test_numpy\(\) \(in module fields.test_numpyarray\), 37](#)
[test_option_list\(\) \(in module fields.test_deprecated\), 34](#)
[test_option_list\(\) \(in module fields.test_loglevel\), 36](#)
[test_output \(module\), 31](#)
[test_output\(\) \(in module test_output\), 31](#)
[test_output_dir_bad_location\(\) \(in module fields.test_files\), 36](#)
[test_output_dir_bad_permission\(\) \(in module fields.test_files\), 36](#)
[test_output_dir_basic\(\) \(in module fields.test_files\), 36](#)
[test_output_file_relative\(\) \(in module fields.test_files\), 36](#)
[test_output_path\(\) \(in module fields.test_files\), 36](#)
[test_output_path_cannot_write\(\) \(in module fields.test_files\), 36](#)

`test_output_path_noopath()` (in module `fields.test_files`),
36

`test_output_unvalidated()` (in module `test_output`), 31

`test_outputfile_no_write()` (in module `fields.test_files`), 36

`test_outputfile_not_a_path()` (in module `fields.test_files`),
36

`test_recursive_schema()` (in module `test_first_test`), 31

`test_relative_file_input()` (in module `fields.test_files`), 36

`test_relative_file_input_failed()` (in module
`fields.test_files`), 36

`test_schema_argparser_with_baseball()` (in module
`test_utils`), 33

`test_serialize()` (in module `fields.test_numpyarray`), 37

`test_simple_description()` (in module `test_first_test`), 31

`test_simple_example()` (in module `test_first_test`), 31

`test_simple_extension_fail()` (in module `test_first_test`),
31

`test_simple_extension_old_pass()` (in module
`test_first_test`), 31

`test_simple_extension_pass()` (in module `test_first_test`),
31

`test_simple_extension_required()` (in module
`test_first_test`), 31

`test_simple_extension_write_debug_level()` (in module
`test_first_test`), 31

`test_simple_extension_write_overwrite()` (in module
`test_first_test`), 31

`test_simple_extension_write_overwrite_list()` (in module
`test_first_test`), 31

`test_simple_extension_write_pass()` (in module
`test_first_test`), 31

`test_slice()` (in module `fields.test_slice`), 37

`test_smart_merge()` (in module `test_utils`), 33

`test_smart_merge_add()` (in module `test_utils`), 33

`test_smart_merge_nested()` (in module `test_utils`), 33

`test_smart_merge_none()` (in module `test_utils`), 33

`test_smart_merge_not_none()` (in module `test_utils`), 33

`test_smart_merge_same()` (in module `test_utils`), 33

`test_utils` (module), 32

`Time` (class in `argschema.fields`), 17

`TimeDelta` (class in `argschema.fields`), 17

`truthy` (`argschema.fields.Boolean` attribute), 16

U

`Url` (class in `argschema.fields`), 17

`URL` (in module `argschema.fields`), 18

`UUID` (class in `argschema.fields`), 14

V

`validate_outpath()` (in module `argschema.fields.files`), 10